Tactile Motion Amplifier

CROWSON™

D-501

OWNER'S GUIDE

IMPORTANT SAFETY INSTRUCTIONS

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus in or near rain or moisture.

1. Read and keep these instructions for future reference.
2. Do not use this apparatus near water.
3. Clean only with a dry cloth.
4. Do not block any ventilation openings. Install according to manufacturer's instructions.
5. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
6. Do not override the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades - one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
7. Protect the power cord from being walked on or pinched particularly at plug, convenience receptacles, and the point where it exits from the apparatus.
8. Only use attachments/accessories specified by the manufacturer.
9. Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

10. Unplug this apparatus during lightning storms or when unused for long periods of time.
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
12. To completely disconnect this equipment from the AC mains, disconnect the power supply cord plug from the AC receptacle
13. This is CLASS II apparatus with double insulation, and no protective earth provided.

CAUTION
CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equivalent triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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Congratulations

Congratulations on your purchase of a Crowson D-501 amplifier and Actuators
This system represents the state-of-the-art in low frequency reproduction. Read and follow the instructions below to ensure safe and proper system operation.

Warning!
To prevent fire or shock hazard, do not expose this equipment to rain or moisture. To avoid electrical shock, do not open the amplifier enclosure or the chassis cover. Please observe all warnings on the equipment itself. There are no user serviceable parts inside. Please refer all service questions to your authorized Crowson or dealer.

Prior to Installation
Please unpack the system carefully. Please save the carton and all packaging materials for future use. Record the serial number in the space provided on the warranty card and page 15 of this manual for future reference.

Product Features

D-501 TACTILE MOTION AMPLIFIER

- 500 watts RMS (700 W peak) high efficiency, Class D
- High current output easily drives up to four Crowson Actuators
- 115V or 230V operation
- Music and Movie modes
- Mute control
- Variable intensity control
- Line-level (RCA) inputs
- Signal sensing auto turn on/off (defeatable)
- 12 Volt trigger
- Selectable phase control (0 or 180 degrees)
- Built-in adjustable (40-160 Hz) digital low-pass crossover with 24 dB/octave slope
- Blue power indicator LED
- Universal IR repeater mini-jack

Front Panel Features

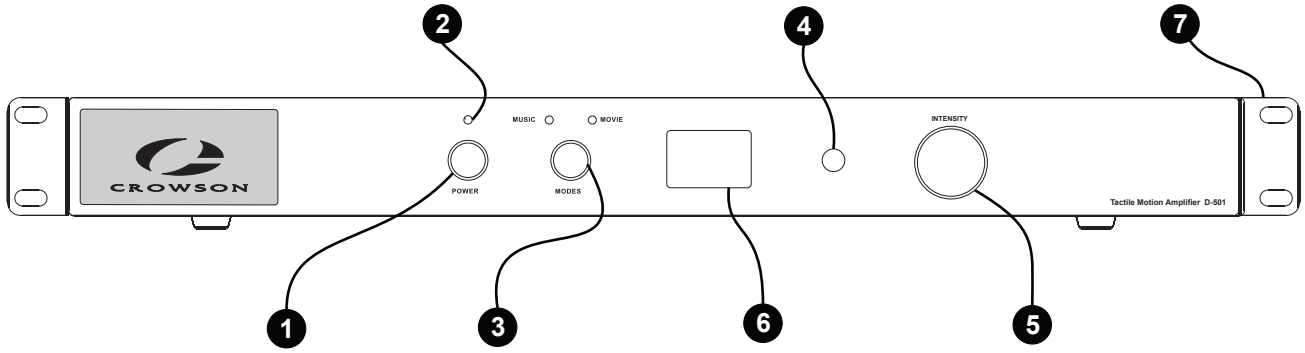

Figure 1: Front Panel Features of the D-501 amplifier.

1 Power Switch
This button forces your D-501 amplifier into standby mode. The power LED turns red and the amplifier puts out no power. The unit will remain in this mode until the POWER button is pressed again. To fully deactivate (i.e. power down) the unit, use the main power switch on the back panel.

2 Power LED
This LED illuminates when the power is on. Blue indicates normal operation. The LED turns red when the unit is in standby mode or the remote has been used to deactivate the unit, and dims when the unit is in night mode.

3 Modes
The Music or Movie toggle button changes the Intensity to an appropriate level for the source material. LEDs placed above the Music or Movie text on the front panel indicate the mode.
Music and Movie modes both have a flat frequency response. Movie mode has a 6db boost over Music

4 Remote Eye
This is the eye that receives infrared commands from the supplied remote control.

5 Intensity (Gain) Control
This continuous rotary knob allows you to balance the output from the motion system with the output of the main speakers in your audio system. The intensity should be set to achieve a natural blend between the subwoofer and motion system.

Note: Intensity can also be controlled by using the supplied remote.

WARNING: Some manufacturers preset their receivers with the Sub-Out (a.k.a. LFE) channel signal at a minimum level. It is very important to verify that your receiver Sub-Out channel is set to the same output level as your front right and left channels.

6 Intensity Level Display
This display shows the intensity setting for several seconds after adjustment. 32 steps.

7 Optional Rack Mount Ears (Included)
These ears can be attached to the D-501 amp to allow standard 19" rack mounting.

Rear Panel Features

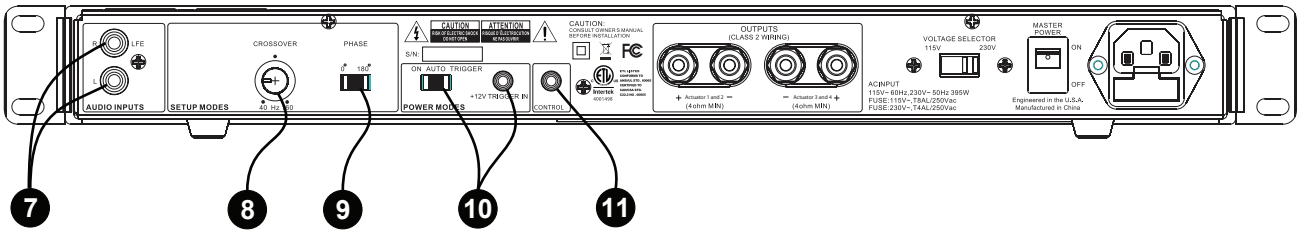

Figure 2: Rear Panel Connections of the D-501 amplifier.

7 Audio Inputs

Connect these jacks to the LINE OUT preamp output, LFE output, or subwoofer output jacks of your receiver/processor . If using the LFE output from your receiver or processor, plug the single cable into the jack labeled LFE input or, for more signal, use a "Y" connector (optional) and feed the signal into both "R" and "L" inputs.

8 Cross-Over

Crossover frequency setting of the Low Pass Filter. Factory-set at 100Hz. The Low Pass Filter can be adjusted from 40 to 160Hz.

9 Phase

Factory-set at 0° and can be changed to 180°. The phase of the actuators can be adjusted to align the signal coincidence of the subwoofer and Tactile Motion System.

10 Power Modes

a. ON ---------- Always On
b. AUTO ---------- On, triggered via signal sense; when signal is off, amp will stay on for approximately 15 to 20 minutes.
c. TRIGGERED ----- On, triggered by 12 VDC, 100mA minimum. NOTE – Use the 1/8˝ mono mini-jack to connect a 12 volt trigger wire from other devices. Connector polarity is tip positive.

11 Control Input

Use this 1/8˝ Mono mini-jack to connect to most IR emitter output connections. The signal will be transferred and flashed to the IR receiver internally behind the front panel. This will eliminate the need to add "stick-on" emitters in most systems.
NOTE: Due to variations in IR system types, not all are compatible with this control jack. In some cases, an emitter will be needed to place over the front panel IR window.

Rear Panel Features

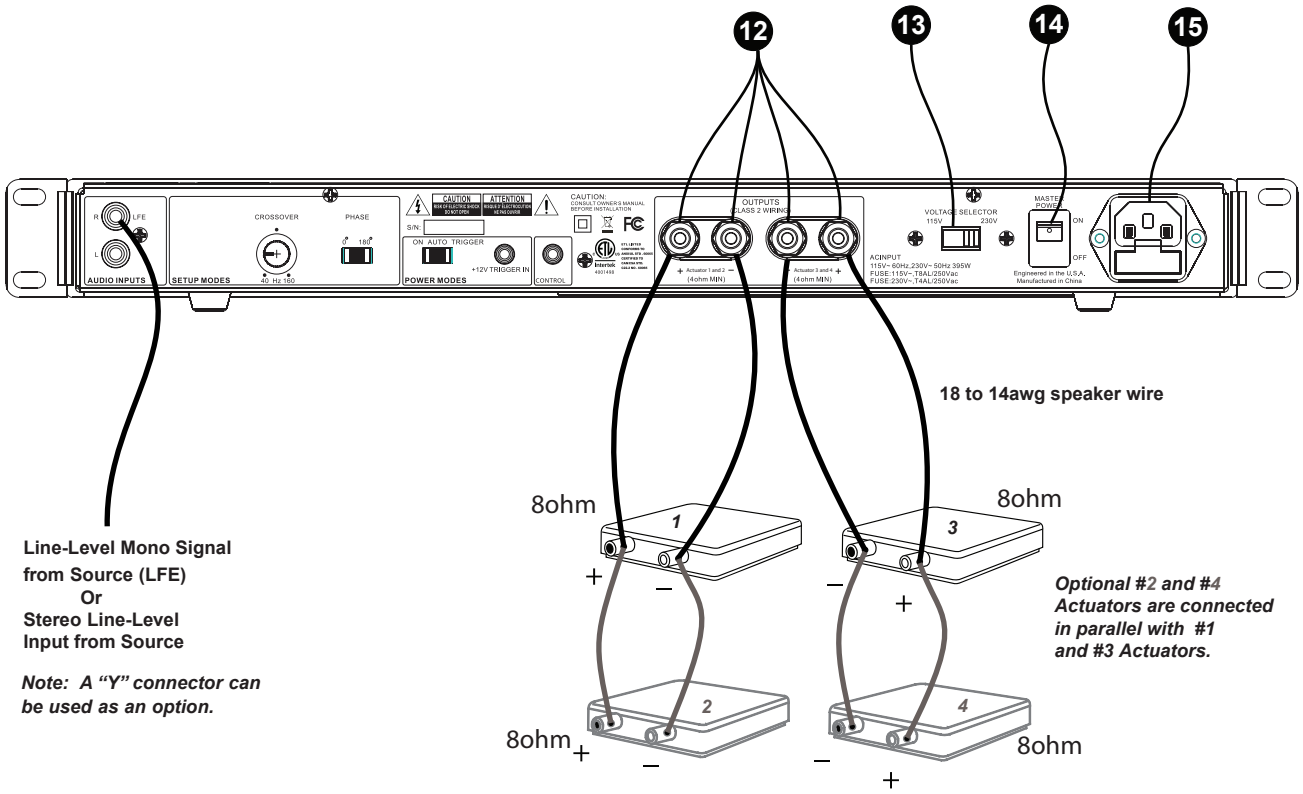

Figure 2: Line-Level and Speaker Level Connections.

12 Outputs

Actuator Connection 5-way Binding Post Terminals. Connect the output terminals to the Actuators being controlled by the D-501 amplifier. Connect a max of two Crowson 8ohm Actuators to each red/black pair of output terminals.

Caution!!! To avoid damage to your D-501 amp and Actuators, be sure to maintain correct polarity when making all speaker connections; red (positive) to red, and black (negative)to black. Be sure that all connections are tight, and that there are no loose strands or frayed wires.

Caution!!! The output is a push-pull design, do not ground the negative.

13 Voltage Selector

Input voltage setting selects the appropriate 115V or 230V setting. The 115V position of this switch is correct for North America; most other regions require setting it to 230V. Make sure the 115/230V switch is set for the correct AC line (mains) voltage before you connect the D-501's power cord. THE D-501 MAY BE SERIOUSLY DAMAGED IF THIS SWITCH IS SET INCORRECTLY.

14 Power Switch

Master Power ON/OFF power switch for the amplifier.

15 IEC Power Cord Socket

Installation

Rackmount Installation

1. Remove the amplifie's four feet from the bottom of the chassis.
2. Attach the included rack-mount ears to the front sides of the amplifier chassis.
3. Securely mount the amplifier into the 19" equipment rack. The amplifier will occupy 1U of rack space.
4. For best results leave 1U of room for ventilation between amplifiers.

Ventilation

Be sure that the amplifier is in a well-ventilated area that provides adequate cooling. If your installation lacks good air flow, such as cabinets or wall-mounted racks, it may be necessary to create some ventilation to air outside the cabinet or rack.
Do not block ventilation holes, or impede air flow by placing objects on or around the amplifier. Do not place the amplifier on carpeting or any similar material.
Do not install the amplifier near a source of heat, or in an extremely humid or wet location.

Positioning

If your D-501 is not rack mounted, position it with all feet resting on a solid level surface. Make sure that there is a minimum of 2" of free air space above the amplifier and 2" on each side for proper ventilation. Allow a minimum of 3" of depth behind unit to accommodate cables and connectors.

CAUTION: All connections and switching must be done with the amplifie's power switch positioned to 'Off'. Connect the power cord last to be sure that the amplifier is off during all of your connections and set up.

Interconnect Cables

When connecting the D-501 amplifier to your Actuators using the speaker level connections, use a high quality speaker cable. It is recommended that you keep the length of cable as short as possible to avoid any potential external interference problems. When connecting the D-500 amplifier to your actuators, use speaker cable that is at least 18-gauge. Be very careful to avoid any loose or frayed strands that could result in a short, causing a dangerous condition and possible damage to your unit. Cables of extremely large size are typically not required. Extremely large wire may not properly fit in thebinding posts, resulting in a poor connection and possible short circuits.
Caution! The power cord should be routed in such a way that it will not be walked on, pinched or compressed in any way that could result in damaging the insulation or wire.

The remote control has the following functions:
1. POWER - Toggles between Standby Mode and ON.
2. VOL+/- – Adjusts the Intensity (level).
3. MUTE – Mutes the motion system. Press again to unmute.
4. MUSIC/MOVIE – Selects the corresponding mode.

Music or Movie Mode
The front panel Music or Movie toggle button changes the intensity to an appropriate level for the source material. You can alternitively use the hand-held remote to select Movie or Music. LEDs on the front panel indicate the mode. Music and Movie mode both have a flat frequency response. The Movie mode has 6dB of additional gain for added impact.

Intensity (Level) Control
Adjust the intensity of motion by turning the intensity knob clockwise to increase, or counter-clockwise to decrease. The knob on the front panel is a continuous rotary control with 32 positions. Set the intensity to your preferred level. The intensity should be set to achieve a natural feeling blend between the subwoofer and motion system.

About Low-Pass Filter (LPF)
The D-501 amplifier inputs sum the left and right channels together and the resulting signal is passed through an adjustable low-pass crossover before being amplified. The crossover control allows you to adjust the upper limit of the Actuator's frequency response from 40 to 160 Hz. The Actuator's response will begin rolling off above the frequency you set this control to. The slope is 24 dB/octave.

You should set the crossover frequency to obtain a smooth and seamless blend with the subwoofer and the main speakers in your system. Adjusting the LPF to the preferred setting will ensure that desirable low-frequency motion is present, while undesirable high-frequency content (such as motion from human voices) is not. Proper adjustment of the LPF will allow your motion experience to most closely resemble a real-world experience.

Start with the LPF set to 100Hz. Reduce the frequency setting if unwanted high frequency content such as voices is present during testing. Increase the setting if you feel that desirable content is being unnecessarily removed.

Most receivers and processors provide a menu option in which you can characterize main speakers as "large" or "small" speakers. This affects the bass signals passed to the main speakers. We recommend in most cases setting the main speakers to "small," despite their size and frequency response characteristics, allowing all multi-channel bass and LFE signals to be passed to the D-501.

Specifications

Continuous Power Output	312 watts RMS powering 2 Actuators (8 ohms ea) 500 watts RMS powering 4 Actuators (8 ohms ea)
Input Sensitivity	200 mv for full output, 500 watts, with level control set to 32 (max).
Frequency Response	10 - 160 Hz
Distortion	.04% THD+N 1W/2W 100 Hz
Auto On Sensitivity	3 mv
External Trigger Voltage	5 V - 20 V
Movie/Music Modes	Music: Flat Movie: Flat, +6dB
Dimensions	17˝ W (18.9˝ including rack mounts) 1.7˝ H (1.9˝ including feet) 10.4˝ D (11.2˝ including speaker connections)
Weight	19.7 lbs.
Certification	CE safety certified

Trouble Shooting

This amplifier is designed to function trouble-free. Most problems that occur are due to simple issues. If you have trouble, check the list of simple fixes below. If the problem persists, contact your authorized Crowson dealer or Crowson technical support at 888-427-6976.

No audio output	• Power cable to the amplifier is incorrectly connected or plugged into an outlet that does not have power. Check connections and verify power at the outlet. • Audio cable to the source component is not connected properly, connected to output or the cable is defective. Check connections or replace cable with one that has been verified as good. • Amplifier is in standby mode, and needs to be turned on “BLUE LED”. • Check the connections of the speaker wire at both the speaker and amplifier. • The level adjustment is turned down. Turn it to the right slowly to raise the volume.
Hum or buzzing sound is heard	• Check RCA input cables by removing them one at a time (powering down the amplifier before disconnecting) and check to see if a connection or cable is to blame.
Amplifier will not turn on	• The amplifier must be plugged into a live outlet. • The Power Switch on the front panel must be on. • The Power Mode switch may be set to the wrong mode for your system.

Warranty

2-Year Limited Warranty

Crowson Amplifier Products have a 2-Year Limited Warranty. This warranty includes parts and labor repairs on all components found to be defective in material or workmanship under normal conditions of use. This warranty shall not apply to products which have been abused, modified or disassembled. Products to be repaired under this warranty must be returned to Crowson Technology or a designated service center with prior notification and an assigned return authorization number (RA).